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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/684,076	10/08/2000	Jonathan Cherneff	0544MH-36339	2872

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EXAMINER	
LOFTIS, JOHNNA RONEE	
ART UNIT	**PAPER NUMBER**
3623	

DATE MAILED: 01/30/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/684,076	CHERNEFF ET AL.	
	Examiner	Art Unit	
	Johnna R. Loftis	3623	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *08 November 2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *2,4-30 and 32-45* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *2,4-30 and 32-45* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. The following is a final office action upon examination of application number 09/684,076. Claims 2, 4-30, 32-45 are pending and have been examined on the merits discussed below.

Response to Arguments

2. Applicant's arguments filed 11/8/05 have been fully considered but they are not persuasive.

3. In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

Specifically, Applicant argues that Lilly does not teach assigning an ability level, however Examiner notes that the prior rejection under 103 covers this limitation. Examiner did not assert that Lilly had this feature and this is precisely why the Dietrich reference was used in the combination. Prior rejections are upheld.

In response to Applicant's arguments that Dietrich does not teach receiving a list of materials available from outside parties and a schedule of availability of the materials available from outside parties, Examiner respectfully disagrees. Dietrich considers an external source of parts needed to fill the requirements for a quantity of products to be produced. "Just in time"

scheduling is used wherein the external availability schedule corresponds to the requirements of the products being produced. Prior rejections are upheld.

4. In response to Applicant's argument that there is no suggestion or motivation to combine Lilly and Dietrich, it is noted that it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971). At the time the invention was made, it was widely known to one of ordinary skill in the art that external sources of supply are considered in production scheduling. For example, in the art of manufacturing and production of products in is known that materials needed for production are rarely all made in-house. It is common that materials are procured from outside sources. For example, Boeing might produce the airplane, or General Dynamics Land Systems might produce parts of an armored tank, but the titanium used comes from outside sources.

5. With respect to the argument that the obviousness of the combination of Lilly, Dietrich and Fields, is based upon improper hindsight reasoning, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971). It is common that a task or job have a corresponding skill level

that must be possessed by the employee or resource working on the task or job. For instance, if the job required electrical wiring, a company would not assign someone with a skill set that is focused in another area. By limiting the assigned resource to those workers who are qualified, the company can ensure that a task will be completely properly. Fields teaches tasks having a required skill level and also the employees having a skill level which are used to assign employees to tasks in column 6, lines 21-65.

6. With respect to Applicant's traversal the Examiner's Official Notice regarding the use of a genetic algorithm to generate the schedule, Examiner points to page 3 of an article entitled, "AI industry shake-out shifts into high gear", dated June 1997, shows i2 acquiring a developer of genetic-algorithm based solution for scheduling and sequencing in supply chain management. In addition, an article dated May 1998, entitled, "Supply Chain Planning Optimization: Just the Facts", shows vendors embedding optimization in their planning applications and how solvers are important to optimization wherein genetic algorithms are used to consider a larger number of possible solutions. Specifically, on page 27, the article discloses the i2 Technologies offers a full suite of optimization products that use internally developed components based on proprietary heuristics, genetic algorithms, and third-party LP/MIP components. Both of these articles are evidence that not only were genetic algorithms widely known and used for optimization prior to the filing of the present application, but that i2 Technologies was also making use of genetic algorithms for optimization purposes. Prior rejections are upheld.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

8. **Claims 2, 4-30 and 32-45** are rejected under 35 U.S.C. 103(a) as being unpatentable over Lilly et al, US 5,787,000, in view of Dietrich et al, US 5,548,518, further in view of Fields et al, US 5,111,391.

As per **claim 2,** Lilly et al teaches receiving a list of a plurality of products to be developed (column 3, lines 31-54 – data in received including work order information, defined as a request to manufacture one or more distinct parts); receiving a list of required completion dates, each completion date specifying the completion date for the development of a corresponding product in the plurality of products (column 3, lines 4-15 – work order information specifies a want date for the work order; lines 26-29 – each operation is assigned a finish date/time); receiving, for each product in the plurality of products, a project definition of a project for developing the product, each project definition defining: a plurality of tasks required to complete a project for developing the product associated with the project definition (column 3, lines 14-17 – the operations information includes the identity and sequence of operations to be performed for the work order); and a list of resources required to complete each task defined in the product definition, receiving a list of available resources, each resource in the list of available resources having a capacity as a function of time (column 3, lines 14-17 – operations information includes resources needed; column 7, lines 8-14 – the resources used in the manufacturing

process are defined as a function of the dates and times in a calendar); and maintaining a scheduler operable to automatically generate a development schedule comprising all tasks for all projects, the development schedule allocating the resources (abstract and column 3, lines 1-47 – a scheduling system for scheduling work orders and resources needed to perform each operation in the work orders).

Lilly et al teaches scheduling a plurality of work orders while including material availability for each material used in the manufacturing process but does not explicitly teach receiving a list of materials available from outside parties distinct from the enterprise and a schedule of availability of the materials available from the outside parties; and the development schedule also scheduling tasks that require materials from outside parties at a time when such materials will be available.

Dietrich teaches a scheduling system wherein an external material availability schedule is used to determine if the material available will meet requirements in scheduling product development (column 3, lines 8-11; column 4, lines 40-45 – material from an external source is used to meet requirements in the product development). Since both Lilly et al and Dietrich teach a scheduling system wherein products are developed according to the availability of materials and resources, it would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate Dietrich's external availability schedule for materials into Lilly et al's scheduling system to account for all materials available to generate a specific product thereby increasing the efficiency of the scheduling system.

The combination of Lilly et al and Dietrich do not explicitly teach the required resources having an ability level and each task specifying a minimum ability level of one or more resources

to be used for that task. Fields et al teaches a scheduling system wherein required skill levels for each task are defined and wherein each resource being assigned to the tasks have an associated skill level. The resources (employees) are then assigned to tasks based on the required skill level. Since both Lilly et al and Dietrich both teach scheduling systems wherein products are developed according to the availability of materials and resources, it would have been obvious to one of ordinary skill in the art to include Fields et al's specification of a skill level for each task and subsequent skill levels of resources (employees) in order to more efficiently allocate each resource to a task. By allocating based on required skill level, each task would be completed by the most qualified resource thereby ensuring highest quality products.

As per **claim 5**, Lilly et al teaches type information identifying the type of task (column 6, lines 1-3 – operations information includes the identity of the operation defined by the work order); hierarchy relationship information comprising one or more pointers to one or more related tasks and information regarding sequence for performing related tasks (column 6, lines 2-3 and 25-50 – the sequence in which the operations are to be performed is defined); duration information specifying a quantity of time the task will take to complete (column 6, lines 8-12 – the period of time needed to perform the operation is defined); resource information specifying one or more resources to be used and a desired ability (column 6, lines 3-10 – identity of resources needed to perform each operation); and progress information specifying progress of the particular task

Lilly et al does not explicitly teach the required resources having an ability level. Fields et al teaches a scheduling system wherein each resource being assigned to the tasks has an associated skill level. The resources (employees) are then assigned to tasks based on the

required skill level. Since Lilly et al teaches a scheduling system wherein products are developed according to the availability of materials and resources, it would have been obvious to one of ordinary skill in the art to include Fields et al's specification of a skill level for each task and subsequent skill levels of resources (employees) in order to more efficiently allocate each resource to a task. By allocating based on required skill level, each task would be completed by the most qualified resource thereby ensuring highest quality products.

As per **claim 6**, Lilly et al teaches one or more constraints associated with a particular task (column 7, lines 8-67 – each resource has a capacity taken in to account when scheduling for a task); and policy information specifying one or more rules for enforcing one or more constraints (column 7, lines 36-67 – the resource capacity calendar is broken in to notches to show resource availability; a shut down notch can be designated representing the manufacturing plant being closed and no resources being utilized).

As per **claim 7**, Lilly et al teaches one or more built-in constraints provided by the scheduler (column 6, lines 25-50 – the linear sequence of operations used to complete a work order are predefined); and one or more user-specified constraints (column 5, lines 55-67 – work order information specifies quantity of the part to be manufactures, want dates, etc., all specified by the user).

As per **claim 8**, Lilly et al teaches a particular task comprises a plurality of subtasks, a task definition for the particular task specifying the plurality of subtasks and an order in which the plurality of subtasks should be performed (column 6, lines 25-50 – the sequence of operations may be single or multiple level; a multiple level work order has a branched sequence

of operations whereby each branch contains a subset of operations for manufacturing an intermediate product or subassembly that is used to manufacture the final product).

As per **claim 9**, Lilly et al teaches the plurality of tasks are defined in a hierarchy specifying relationships among related tasks, at least one task comprising a plurality of sub-tasks, each leaf tasks being associated with an identification of one or more resources for performing the leaf task (column 6, lines 25-50 – the sequence of operations may be single or multiple level; a multiple level work order has a branched sequence of operations whereby each branch contains a subset of operations for manufacturing an intermediate product or subassembly that is used to manufacture the final product, these subsets of operations include material requirements).).

As per **claim 10**, Lilly et al teaches a particular task in the plurality of tasks comprises a standard task for repeated use, the method further comprising storing a task definition for the particular task comprising a list of sub-tasks for performing the particular task and a list of resources for performing the sub-tasks in the list of sub-tasks (column 3, lines 1-30 – the computer system stores operations information for each work order to be scheduled including the identity and sequence of operations to be performed for the work order and the identity of the resources needed).

As per **claim 11**, Lilly et al does not explicitly teach monitoring the materials identified in the list of materials from outside parties distinct from the enterprise using one or more supply chain tools operable to monitor the outside parties; and if one or more materials are determined to be unavailable using the one or more supply chain tools, automatically modifying the development schedule based on information obtained by the one or more supply chain tools. Dietrich teaches monitoring the material availability and if there is not sufficient material

available, then the available resource will be allocated to the higher priority product and the schedule is changed (column 4, lines 40-45). Since both Lilly et al and Dietrich teach a scheduling system wherein products are developed according to the availability of resources, it would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate Dietrich's external availability schedule for materials into Lilly et al's scheduling system to account for all resources available to generate a specific product thereby increasing the efficiency of the scheduling system.

As per **claim 12**, Lilly et al teaches capacity of the resource (column 7, lines 8-67 – each resource has a capacity taken in to account when scheduling for a task); and availability of the resource (column 7, lines 38-67 – the resource capacity calendar shows availability of the resource). Lilly et al does not explicitly teach the required resources having an ability level or competency information indicating how well the resource performs the type of work identified. Fields et al teaches a scheduling system wherein each resource being assigned to the tasks has an associated skill level wherein there is a skill level matrix identifying the highest skill level that can perform the task (inherently a resources skill level would indicate his or her competency level). The resources (employees) are then assigned to tasks based on the required skill level. Since Lilly et al teaches a scheduling system wherein products are developed according to the availability of materials and resources, it would have been obvious to one of ordinary skill in the art to include Fields et al's specification of a skill level for each task and subsequent skill levels of resources (employees) in order to more efficiently allocate each resource to a task. By allocating based on required skill level, each task would be completed by the most qualified resource thereby ensuring highest quality products.

As per **claim 13**, Lilly et al teaches the list of available resources is defined in a hierarchy specifying relationships among related resources, at least one resource comprising a plurality of sub-resources (column 6, lines 25-50 – the sequence of operations may be single or multiple level; a multiple level work order has a branched sequence of operations whereby each branch contains a subset of operations for manufacturing an intermediate product or subassembly that is used to manufacture the final product).

As per **claim 14**, Lilly et al teaches receiving project status information from a user, the project status information regarding the status of a project in the plurality of projects; and automatically modifying the development schedule based on the project status information (column 9, line 58 – column 10, line 8 – if it is determined that one or more operations in a sequence are delayed, the system reschedules the operations to achieve an optimum schedule).

As per **claim 15**, Lilly et al teaches receiving resource status information from a user, the resource status information regarding the status of available resources in the list of available resources; and automatically modifying the development schedule based on the resource status information (column 9, line 58 – column 10, line 8 – if it is determined that one or more operations in a sequence are delayed by the unavailability of resource capacity, the system reschedules the operations to achieve an optimum schedule).

As per **claim 16**, Lilly et al teaches the resource status information comprises a change in the capacity of a resource (column 9, line 58 – column 10, line 8 – if it is determined that one or more operations in a sequence are delayed by the unavailability of resource capacity, the system reschedules the operations to achieve an optimum schedule).

As per **claim 17**, the combination of Lilly et al, Dietrich et al and Fields et al does not explicitly teach the use of a genetic algorithm for generating the development schedule. However, it is old and well known to use genetic algorithms to solve scheduling problems since genetic algorithms are useful in maximizing or minimizing an objective function within a set of constraints, thereby increasing the efficiency of the scheduling system.

Claims 4 and 18-30 teach the system for performing the method of claims 1, 8-11 and 13-17. Since the combination of Lilly et al, Dietrich and Fields et al teach computer systems for performing scheduling functions, the same rejections as applied to claims 2 and 5-17 also applies to claims 4 and 18-30.

Claims 32-45 teach the software embodied in a computer-readable medium that is executed to perform the method of claims 1, 8-11 and 13-17. Since the combination of Lilly et al, Dietrich and Fields et al teach computer systems and software for performing scheduling functions, the same rejections as applied to claims 2 and 5-17 also applies to claims 4 and 18-30.

Conclusion

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

"Supply Chain Planning Optimization: Just the Facts", May 1998

"AI industry shake-out shifts into high gear", June 1997

"British American Tobacco Licenses i2 Technologies' RHYTHM Supply Chain Management Software", May 1997

Intelligent Manufacturing, News in Brief, September 1997

"Improve Your Profitability Through Supply Chain Optimization", April 1998

10. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Johnna R. Loftis whose telephone number is 571-272-6736. The examiner can normally be reached on M-F 8am-4:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tariq Hafiz can be reached on 571-272-6729. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

JL
1/20/2006

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